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Supramolecular Design of Photoactive Coordination Assemblies: Synthesis, Materials Characterization, and Reactivity. Ivan G. Georgiev, Leonard R. MacGillivray, Univ. of Iowa, Iowa City, Iowa, 305 Chemistry Bldg., 52242.

A synthetic strategy based on the emergence of the fields of coordination and supramolecular chemistry has led to the formation of metal-organic assemblies that exhibit reactivity in the solid-state. In this study, our attention focuses upon the construction of a series of metal-organic assemblies that direct the [2+2] photodimerization of olefins in the solid state. Such assemblies enable a means to combine the properties of metals with organic solid-state reactivity.

As a starting point, we synthesized dinuclear Zn(II) complexes based on ditopic Schiff-base ligands. The complex directs photodimerization, of *trans*-1,2-bis(4-pyridyl)ethylene, in the cationic assembly $[\text{Zn}_4\text{L}_4(\text{OH})(4,4\text{-bpe})_2]^{4+}$ (LH=2,6-bis[N-(2-pyridylethyl)formimidoyl]-4-methylphenol), by way of coordination bonds.

We will also show that the solid-state reactivity is maintained within derivatives of the complexes, which have been synthesized by attaching functional groups to the peripheries and arms of the Schiff-base ligands. We also demonstrate that such reactivity can proceed *via* single-crystal-to-single-crystal reactions and lead to materials that exhibit changes in fluorescence.

A photoreactive assembly with a cavity that hosts molecules and anions as guests will also be described.